AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A method of forming a coating on a plastics substrate~~, the method~~ comprising the steps of:

applying a metallic layer to the substrate wherein the metallic layer is selected from the group of metals consisting of magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals; and

~~forming the coating from the metallic layer by~~ subjecting the metallic layer to electrolytic plasma oxidation.

2. (currently amended) The ~~A~~ method according to Claim 1~~,~~ wherein the ~~metallic layer~~ is ~~formed from~~ group of metals further includes ~~one of~~ aluminium~~,, magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals.~~

3. (currently amended) The~~A~~ method according to Claim 1 ~~or Claim 2,~~ wherein the metallic layer is deposited on the substrate.

4. (currently amended) The~~A~~ method according to Claim 3~~,~~ wherein the metallic layer is sprayed on the substrate.

5. (currently amended) The~~A~~ method according to Claim 1 ~~or Claim 2,~~ wherein the metallic layer is adhered to the substrate.

6. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 wherein the metallic layer comprises a thickness ~~of the metallic layer applied to the substrate is~~ less than 100um.

7. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 wherein the substrate is roughened prior to ~~the application of~~applying the metallic layer thereto.

8. (currently amended) The~~A~~ method according to ~~any of~~ Claims 1 ~~to 6,~~ wherein the metallic layer is formed on a second metallic layer previously applied to the substrate.

9. (currently amended) The~~A~~ method according to ~~any of~~ Claims 1 ~~to 6,~~ wherein the metallic layer is formed on a ~~second~~ polymeric layer previously applied to the substrate.

10. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 wherein the substrate ~~is~~ comprises an epoxy-carbon fibre composite or fibre reinforced plastics material.

11. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 ~~wherein~~ further including the step of smoothening the metallic layer ~~is smoothened~~ prior to the step ~~formation of the coating therefrom~~subjecting the metallic layer to electrolytic plasma oxidation.

12. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 wherein the electrolytic plasma oxidation is performed at a pH ~~in the range~~ from 7 to 8.5.

13. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 wherein the coating comprises a ~~the~~ thickness ~~of the coating formed from the metallic layer is~~ less than ~~100pm~~100um.

14. (currently amended) The~~A~~ method according to Claim 13~~,~~ wherein the thickness ~~of the coating formed from the metallic layer~~ is less than 50um.

15. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 1 ~~wherein the external surface of the coating formed from the metallic layer is subsequently treated to~~further comprising the step of modifying ~~the~~ a physical ~~and/or chemical properties~~ property

of the coating after the step of subjecting the metallic layer to electrolytic plasma oxidation ~~formed on the substrate~~.

16. (currently amended) The~~A~~ method according to Claim 1~~5~~, ~~wherein an external layer~~further comprising the step of ~~the coating is~~ at least partially ~~removed~~ removing ~~following formation thereof~~ an external layer from the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

17. (currently amended) The~~A~~ method according to Claim 1~~6~~, ~~wherein~~ further comprising the step of ~~at least part of the external layer is~~ abrasively ~~removed~~ removing at least part of ~~from~~ the ~~coating~~metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

18. (currently amended) The~~A~~ method according to ~~any of~~ Claims 1~~5~~ ~~to 17,~~ further comprising the step of applying ~~to the coating~~ a material for reducing the porosity of the coating to the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

19. (currently amended) The~~A~~ method according to ~~any of~~ Claims 1~~5~~ ~~to 17,~~ further comprising the step of applying ~~to the coating~~ a material for enhancing the corrosion resistance of the coating to the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

20. (currently amended) The~~A~~ method according to ~~any of~~ Claims 1~~5~~ ~~to 19,~~ further comprising the step of applying ~~to the coating~~ a layer ~~formed from~~comprising at least one organic material selected from the group consisting of a fluorocarbon, polytetrafluoroethylene, ~~MoS2,~~ Carbon, ~~Ni, Cr, Mo, W,~~ carbides of ~~any of the aforementioned metals~~Ni, Cr, Mo and W, a paint and a resin after the step of subjecting the metallic layer subjected to electrolytic plasma oxidation.

21. (currently amended) A method of forming a coating on a metallic or plastics substrate~~,~~ ~~the method~~ comprising the steps of:

applying a first metallic layer to the substrate~~,~~;

applying a second metallic layer ~~over~~ on at least a portion of the first metallic layer~~,~~;

and ~~forming the coating from the second metallic layer by~~ subjecting the second metallic layer to electrolytic plasma oxidation to form the coating.

22. (currently amended) The~~A~~ method according to ~~any preceding claim,~~Claim 21 wherein the substrate ~~is~~ comprises a component of a vacuum pump.

23. (currently amended) A vacuum pump component comprising: ~~formed from~~ a metallic ~~or plastics material~~ layer ~~and~~ on the component and wherein the metallic layer is ~~having a coating thereon formed by~~subjected to electrolytic plasma oxidation ~~of a metallic layer applied to the component~~.

24. (new) The method according to Claim 1 wherein the substrate is a component of a vacuum pump.

25. (new) The method according to Claim 1 further comprising the step of treating an external surface of the coating to modify a chemical property of the coating.

26. (new) The method according to Claim 1 further comprising the step of applying to the metallic layer subjected to electrolytic plasma oxidation a layer formed from at least one metal selected from the group consisting of Mo, Ni, Cr and W.

27. (new) A method of forming a coating on a metallic or plastics substrate comprising the steps of:

applying a layer comprising nickel to the substrate;

applying a layer comprising aluminum to the nickel layer; and

subjecting the aluminum layer to electrolytic plasma oxidation.

28. (new) A vacuum pump component having a surface comprising:

a metallic layer on the surface wherein the metallic layer is selected from the group of metals consisting of aluminum, magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals; and

wherein the metallic layer is subjected to electrolytic plasma oxidation.

29. (new) A vacuum pump comprising:

a component; and

a metallic layer on the component wherein at least a portion of the metallic layer is oxidized by electrolytic plasma oxidation.

30. (new) The vacuum pump of claim 29 wherein the component is selected from the group of vacuum pump components consisting of a composite tube, a regenerative section, a molecular section, a pipe, a housing, a rotor and a stator.

31. (new) The vacuum pump of claim 29 wherein the component comprises a metal.

32. (new) The vacuum pump of claim 29 wherein the component comprises a plastic.

33. (new) The vacuum pump of claim 29 wherein the component comprises an epoxy-carbon fiber composite or fiber reinforced plastics material.

34. (new) The vacuum pump of claim 29 wherein the metallic layer is selected from the group of metals consisting of aluminum, magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals and wherein the metallic layer is subjected to electrolytic plasma oxidation.

35. (new) The vacuum pump of claim 29 wherein the at least a portion of the metallic layer oxidized by electrolytic plasma oxidation comprises a ceramic.

36. (new) The vacuum pump of claim 35 wherein the ceramic comprises a transitional layer.

37. (new) The vacuum pump of claim 36 wherein the ceramic further comprises a functional layer comprising a sintered ceramic oxide having a hard crystallite.

38. (new) The vacuum pump of claim 37 wherein the ceramic further comprises a surface layer having a lower hardness value and a higher porosity value than the hardness and porosity values of the functional layer.

39. (new) A vacuum pump component having a ceramic coating comprising:
a metallic layer having an outer surface;
wherein the metallic layer comprises:
a surface layer extending inwardly from the outer surface of the metallic layer;
a functional layer extending inwardly from the surface layer;
a transitional layer extending inwardly from the functional layer; and
an unreacted metallic layer extending inwardly from the transitional layer.

40. (new) The vacuum pump component of claim 39 wherein at least one of the surface layer, the functional layer and the transitional layer is formed by exposing at least a portion of the metallic layer to electrolytic plasma oxidation.

41. (new) The vacuum pump of claim 39 wherein the transitional layer is an adhesive for the ceramic coating.

42. (new) The vacuum pump of claim 39 wherein the functional layer comprises a sintered ceramic oxide having a hard crystallite.

43. (new) The vacuum pump of claim 39 wherein the surface layer has a lower hardness value and a higher porosity value than the hardness and porosity values of the functional layer.